

From owner-qrp-l@netcom.com Sat Nov 19 03:47:22 1994
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: Re "589" without meter
Date: Fri, 18 Nov 94 23:37:30 EST5EDT
Message-Id: <1994Nov18.233730.27369@wb3ffv.ampr.org>

Steve Hideg recently wondered how someone using the NE4040/Small Wonder rig determined that the other person was 589, when the rig has no S meter. Us old timers know that one, from waaaaay back when receivers had RF gain controls that we actually used and no AGC. You make a judgement call based on the relative strength of the signal compared to other signals, background noise, amount of RF gain required, etc. Not very precise, but then even an S meter is imprecise at best. That's a nice thing about a rig with no AGC--you can tell relative signal strengths. If you have a rig with AGC but no S meter, everyone tends to have roughly the same audio output level regardless of their relative strength, and that makes it hard to give "accurate" signal reports. ("Old timer"--I started in 1964 at the age of 14...guess that makes me an old timer, though I'm not about to join QCWA--that's an admission of old timer-ness!) 73 and Queue Our Pea DE WA8MCQ

--

Mike Czuhajewski, user of the UniBoard System @ wb3ffv.ampr.org
E-Mail: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org
The WB3FFV Amateur Radio BBS - Located in Baltimore, Maryland USA
Supporting the Amateur Radio Hobby, and TCP/IP InterNetworking

From owner-qrp-l@netcom.com Sat Nov 19 02:08:11 1994
From: rohrwerk@holonet.net
Date: Fri, 18 Nov 1994 19:22:21 -0800
Message-Id: <199411190322.TAA19726@holonet.net>
Subject: Re: 450 Window Line

On 11-07-94 msdooley@collie.aud.alcat wrote to qrp-l@netcom.com, bcutter:

> I use it at the house and have had real good luck. You should keep it
> about 6 to 12 inches away from the house, trees, etc. It's also a
> problem bringing it into the house. I use banana jacks mounted in a
> plxiglass window.

I've gotten by with putting one side of the line into the little standoffs used for 300 ohm TV flat line. It is therefore less than 6 inches from a wooden surface, which I think is OK. Metal siding, that would be different, but even then I'll bet you still would have few problems. I just bring it into a hole in the side of the house, caulked up and painted.

I don't worry much about insulating such things perfectly for power under 500 watts or so. I even have part of my loop antenna wire just strung OVER the trees, without supporting ropes and insulators. If it gets wet, just adjust

the tuner!

> Another good way is to get a balun, mount it under
> the eave of the house and use coax between the balun and radio. Good
> luck! Mike KE4PC

I personally don't believe in baluns at high impedances and voltages, especially when impedances are highly reactive. (Assuming a multiband wire antenna system with random impedances). And of course, the coax would be mismatched for quite a ways, increasing the loss.

Don't be squeamish. Bring the damn ladder line all the way into the shack.

```
: John Seboldt  rohrwerk@holonet.net /   I am Bach of Borg...
: Amateur radio K0JD...                /   your style will be
: Church of the Annunciation,          /   assimilated.
: Minneapolis                                /
```

-> Alice4Mac 2.3 E QWK Eval:05Mar94

From owner-qrp-l@netcom.com Fri Nov 18 18:54:05 1994

Message-Id: <9411181947.AA04559@mailserv-D.ftp.com>

Date: Fri, 18 Nov 1994 14:48:06 -0500

From: mrioux@ftp.com (Mike Rioux)

Subject: Add-on for WM-1^

>Return-Path: <owner-qrp-l@netcom.com>

>From: "RICHARD HIEBER" <SZ0026@daphne.rrze.uni-erlangen.de>

>To: qrp-l@netcom.com

>Date: Tue, 4 Oct 1994 14:52:32 MET

>Subject: Add-on for WM-1^

>Priority: normal

>Sender: owner-qrp-l@netcom.com

>Precedence: list

>Content-Length: 3023

>

>Hi gang,

>

>I had a short exchange with somebody from the QRP mailing list some
>weeks ago. I told him about a little circuitry that I added to my
>beloved WM-1 wattmeter from Oak Hills Research. The problem was, I
>forgot to switch it off and drained the battery. If not, I was afraid
>that I might have forgotten to switch it off and was much too occupied
>to check the position of the rotary switch.

>

>One day then I decided to install the following circuitry:

>

>

>I'd like to hear about it.

>

>72 & 73 de Richard, DL8MFQ @ DB0SIF.DEU.EU (alias AA8CP)

>

>

>

>

```
#####  
# Michael Rioux, NW1J                      Internet: mrioux@ftp.com      #  
#                                           Voice:      508-659-6347      #  
# FTP Software, Inc.                      Fax:      508-659-6112      #  
# 2 High St.                              #  
# No. Andover, MA 01845  Massachusetts finally ratified the Bill of #  
#                               Rights in 1939 - 150 years after the  #  
#                               Constitution was written!              #  
#####
```

From owner-qrp-l@netcom.com Fri Nov 18 19:41:53 1994

Date: Fri, 18 Nov 1994 17:38:37 -0330 (NST)

From: Robert Gobrick <bgobrick@random.ucs.mun.ca>

Subject: Add-on for WM-1^ (fwd)

Message-Id: <Pine.3.87.9411181737.D10918-0100000@random.ucs.mun.ca>

Ted - I dug this out of my network file - boy I better do some cleanup
before they clean me up..

Give it a try and let us know how it works (I'm waiting for a few success
stories - hi)

72 Bob V01DRB/WA6ERB

----- Forwarded message -----

Date: Tue, 4 Oct 1994 14:52:32 MET

>From: RICHARD HIEBER <SZ0026@daphne.rrze.uni-erlangen.de>

To: qrp-l@netcom.com

Subject: Add-on for WM-1^

Hi gang,

I had a short exchange with somebody from the QRP mailing list some
weeks ago. I told him about a little circuitry that I added to my
beloved WM-1 wattmeter from Oak Hills Research. The problem was, I
forgot to switch it off and drained the battery. If not, I was afraid
that I might have forgotten to switch it off and was much too occupied
to check the position of the rotary switch.

[illegible]

The essential element in the circuit is the push button which empties the condenser. As long as the condenser gets loaded, the two transistors are giving way to feed the battery voltage to the wattmeter. I am getting a switch-off time of about 4 minutes with a C of 22 or 47 micro Farads (can't remember the right value). In the last minute or so the wattmeter readings are getting inaccurate since the voltage gets cut off gradually, not like with a switch. I've thought about better designs, e.g. with a NE555 (uses too much power standby) or with a low power thyristor (current consumption of the wattmeter is too low), but wasn't successful. Standby consumption is NOT zero: My digital ammeter shows something around 1 micro amp. I think it's

tolerable. Time will tell :-)

If anybody else has a better solution or ideas to improve on this one, I'd like to hear about it.

72 & 73 de Richard, DL8MFQ @ DB0SIF.DEU.EU (alias AA8CP)

From owner-qrp-l@netcom.com Sat Nov 19 00:25:31 1994
Date: Fri, 18 Nov 1994 02:54:11 +000 (UTC)
From: Rich Mulvey <rkm@vectorbd.com>
Subject: Re: Adding turns to a VFO toroid
Message-Id: <Pine.3.87.9411180211.A26847-0100000@vectorbd.vectorbd.com>

On Thu, 17 Nov 1994 KELL@mpac.jsc.nasa.gov wrote:

> I have a NORCAL 40 with the VFO toroid wound with 59 turns to get it into the
> novice band. I want to move the rig down to the the 7030/7040 area, so I
> need to add three turns. The thought of removing 59 turns, so I can put 62
> back on is a real turn-off. So I thought, why not just tack a bit of wire
> onto the end of the current piece and then add three turns? Would there be
> a problem with doing this? There would be this solder joint in the middle of
> toroid. Would it affect the operation of the coil in some unspecified
> negative fashion? Does everybody already do this and just don't talk about
> it? :)

Been there, did that, worked fine. :-)

(Actually, I needed to add only 2 addition turns to get it down to around
7030.)

- Rich

From owner-qrp-l@netcom.com Fri Nov 18 03:06:01 1994
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: Attn Milliwatt waiting list
Date: Fri, 18 Nov 94 00:37:50 EST5EDT
Message-Id: <1994Nov18.003750.1092@wb3ffv.ampr.org>

FOR THOSE WHO I TOLD WERE ON THE WAITING LIST FOR A COPY OF THE
MILLIWATT (no others may apply): I sent out a posting saying that Bill

went to the printer to get enough copies to satisfy the waiting list (which is frozen at 19, with no additional names being taken). I requested return e-mails to confirm that you still want your copies; over half have replied, but many have not. If I told you that you were on the waiting list, please let me know if you want your reserved copy...and then sit down and put a check in the mail immediately. Please let me know by e-mail if interested so I can keep my records updated and hold your reserved copy. 73 and Queue Our Pea DE WA8MCQ

--

Mike Czuhajewski, user of the UniBoard System @ wb3ffv.ampr.org
E-Mail: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org
The WB3FFV Amateur Radio BBS - Located in Baltimore, Maryland USA
Supporting the Amateur Radio Hobby, and TCP/IP InterNetworking

From owner-qrp-l@netcom.com Fri Nov 18 13:25:10 1994
From: KELL@mpac.jsc.nasa.gov
Date: Fri, 18 Nov 1994 8:40:49 -0600 (CST)
Message-Id: <941118084049.3aa@mpac.jsc.nasa.gov>
Subject: Automatic power shutoff mod sought.

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.
.

There was a automatic turn-off feature posted here a few months ago on the QRP-L. I'd be curious if any other folks have implemented this user mod.

.
.
.
.

Thanks for your info.

72 Bob V01DRB/WA6ERB

If anyone has the post, or knows how it was done, could you please post it. I don't remember seeing it here.

72 & 73

Ted Kell@mpac.jsc.nasa.gov
KC5CUW/AA

From owner-qrp-l@netcom.com Sat Nov 19 00:52:35 1994
From: CamQRP@aol.com
Date: Fri, 18 Nov 1994 21:13:25 -0500
Message-Id: <941118210933_2600571@aol.com>

Subject: Re: Big QRP-specific contests?

Hello Dave -

The next large-scale QRP contest is the Michigan QRP Club contest, which is happening this coming January 7 - 8, 1995. It is a 36 hour CW contest. Rules will be published in QST and CQ contest columns, or send an SASE to L. T. Switzer, N8CQA, 654 Georgia Ave., Marysville, MI 48040-1243.

The next biggie is the QRP ARCI Spring QSO Party, which will take place the weekend of April 8 - 9. It will also be published in QST and CQ, or drop me a msg here and I'll send you the specifics.

There are also several short sprints, but I'm not sure if they fall within your definition of "large-scale" contests. I'll be glad to give you the info on those if you care to have it.

73 es 72,

Cam Hartford, N6GA
QRP ARCI Contest Manager

From owner-qrp-l@netcom.com Fri Nov 18 01:17:58 1994
Message-Id: <2ecc05b5.pandora@pandora.uucp>
Date: Fri, 18 Nov 1994 09:39:01 +0800
From: "W. Daniel 9V1ZV" <pandora!daniel>
Subject: Burning EPROM's

Hi Gang,

I can burn EPROM's if anyone needs them programmed. Happen to have a programmer lying around. I know its a little far though, but well, I am here.

73 de 9V1ZV,
Daniel

--

```
+-----+-----+
| Daniel Wee | daniel%pandora@csah.com |
| 9V1ZV      | daniel.wee@f516.n600.z6.fidonet.org |
| UUCP1.12j  | Packet: 9V1ZV @ 9V1VS.SGP.AS -- |
+-----+-----+
```

A public-opinion poll is no substitute for thought
-- Warren Buffet --

From owner-qrp-l@netcom.com Fri Nov 18 15:43:15 1994
Date: Fri, 18 Nov 1994 08:13:22 +0800
From: Raymond.Anderson@EBay.Sun.COM (Ray Anderson)
Message-Id: <9411181613.AA01470@uranium.EBay.Sun.COM>

Subject: Re: Burning EPROM's

If anyone on the net needs EPROM's programmed, I have a EPROM programmer hooked up to my PC at home. If you need assistance, let me know.

73's de Ray WB6TPU
raymonda@uranium.ebay.sun.com

From owner-qrp-l@netcom.com Sat Nov 19 03:25:02 1994
From: CamQRP@aol.com
Date: Fri, 18 Nov 1994 23:55:17 -0500
Message-Id: <941118235513_2704791@aol.com>
Subject: Cheap (and good) keyer

Hello -

I arrived in the middle of this, so please ignore if you've heard this one before. I have been using the little CMOS keyer described in June 1982 QST since about 1982, and it's going strong today, with many FDs and other camping adventures under its belt. It uses 5 CMOS chips (2 - 4011s, 2 - 4027s and a 4001) plus some transistors for switching, runs on a 9 volt battery for a long time, does full Iambic with dot and dash memory. It is not as small as a Curtis keyer, however, but at today's prices it is probably lots cheaper. The article includes a PC board layout.

72 es 73, Cam N6GA

From owner-qrp-l@netcom.com Fri Nov 18 11:08:05 1994
Date: Fri, 18 Nov 1994 06:43:29 -0600 (CST)
From: Bob Howle <bhowle@freud.inst.com>
Subject: Re: CHEAP KEYER
Message-Id: <Pine.SOL.3.90.941118064139.27017A-100000@freud>

On Thu, 17 Nov 1994 KevinN8XEE@aol.com wrote:

> Bob, I'm currently using a single-paddle key (homebrew from hacksaw blade,
> with several refinements), and find it very comfortable up to about 24WPM.
> Faster than that it bounces too much (or maybe it's my fist!). If anyone
> would like the details of this paddle, let me know.
> Best 73
> Kevin
> N8XEE

Kevin -

By all means, tell us more.

Relurking -
Bob/WA4ZID

From owner-qrp-1@netcom.com Fri Nov 18 16:19:33 1994
Date: Fri, 18 Nov 94 11:34:50 -0600
From: adams@chuck.dallas.sgi.com (chuck adams)
Message-Id: <9411181734.AA05128@chuck.dallas.sgi.com>
Subject: dit dit

I stand corrected by Steve Hideg. dit dit requires two moves.

dit dit
SIG
Chuck Adams K5FO CP-60
adams@sgi.com

From owner-qrp-1@netcom.com Fri Nov 18 16:57:17 1994
Date: Fri, 18 Nov 1994 12:10:55 +0800
From: Raymond.Anderson@EBay.Sun.COM (Ray Anderson)
Message-Id: <9411182010.AA02054@uranium.EBay.Sun.COM>
Subject: Re: Dummy loads

Michael AA0UB <miker@cc.com> writes:

> >
>
> I rigged a dummy load from my junk parts:
>
> 1) PL259 with about 3" coax sticking out
>
> 2) expose the center tap at the end
>
> 3) solder a 50ohm 25watt ceramic resistor
> between the end centertap and the case
> of the PL259.
>
> ----
> ==| [COAX]---,
> ----\ /
> R50ohms25wattsR
>
> Am I way off base here?
>

No, not off base, just a couple of things to keep in mind:

1.) The leads (center conductor and braid) going to the resistor will have a certain amount of inductance which will limit the maximum useful frequency range of you load. At higher frequencies the inductance of the leads will become significant enough to make your load not look totally resistive. Shorter leads are better, with no lead length being the most desirable condition. The situation with the load you've described may be a little different since you have the ground at the bottom end of the shield near the connector which is a portion of a wavelength away from the other end of the coax. At HF this is so small as to not be a problem, however it may act a little "funny" at VHF. I'd have to put it into Touchstone or SPICE and see what happens at VHF and above.

2.) Be sure your resistor is non-inductive (not wire wound). There are special RF non-inductive resistors made for the purpose but are generally not too easy to find. Common carbon composition parts are pretty good for dummy load applications. Metal film resistors aren't quite as good and may have appreciable inductance in parts made by some manufacturers (Probably OK for the HF bands though). Beware of some resistors that are billed as "non-inductively wound", The manufacturer winds half the length of a piece of resistance wire clockwise and the other half counterclockwise, supposedly canceling out the inductance. This may be OK for switching power supplies, but I wouldn't recommend it for RF applications.

3.) Note that the dummy load which is not shielded (like you described above), WILL radiate a signal, though not too efficiently. At QRP power levels this shouldn't be a big deal, but many QRO operators have made solid contacts when inadvertently using a dummy load. Fine for QSO's, but not too good from a QRM aspect.

Good luck with your project!

73 de WB6TPU, Ray

From owner-qrp-l@netcom.com Fri Nov 18 17:18:29 1994
Date: Fri, 18 Nov 94 09:13:13 MST
From: miker@cc.com (Mike Robinson)
Message-Id: <9411181613.AA16123@cc.com >
Subject: Dummy Loads Two

My last posting mentioned a ceramic resistor in series with the PL259 connection points.

CAUTION: The ceramic resistor is wire wound and will

cause an inductive loading. Making its reliability as a 50ohm load questionable.

I'll be changing my dummy load to carbon resistors. At QRP levels it is easy to aquire the dissipative requirements.

Sorry if this caused you to run over to your junk box, build the cheapest dummy load known to ham, connect it to your favorite, built with love, qrp rig, and blow the smithereens out of the final. I was only asking a question in my original posting. ;^}

Actually, I've been using this dummy load on all of my qrp rigs and have been making contacts after the fact, so no damage has been caused.

```
=====
7.3 de Michael aa0ub          ( formerly kd6wdd and kg0ot )
miker@cc.com                  --==<< I'm the last 'S' in KISS >>==--
=====
```

From owner-qrp-l@netcom.com Fri Nov 18 05:34:54 1994
Date: Fri, 18 Nov 1994 00:34:03 -0800 (PST)
From: "R. Seacat" <ki7zd@halcyon.com>
Subject: Re: Fox hunt
Message-Id: <Pine.ULT.3.91.941118003309.17099B-100000@chinook.halcyon.com>

Hi Folks.

Can someone fill me in on the fox hunt im reading about here?

You can email me a text file er. sumthin...

Thanks

```
/-/-/
|
| KI7ZD
__| WWA CN87 73's_____
```

From owner-qrp-l@netcom.com Fri Nov 18 13:35:23 1994
Date: Fri, 18 Nov 1994 08:05:33 -0700 (MST)
From: Robert Cutter <bcutter@csn.org>
Subject: Fox Hunt

Message-Id: <Pine.3.89.9411180830.A9051-01000000@teal.csn.org>

I will be the fox Monday evening, November 21(local).

7.110 MHz 0200z-0300z

7.040 MHz 0300z-0330z

72, Bob KI0G

From owner-qrp-l@netcom.com Fri Nov 18 15:10:33 1994

Date: Fri, 18 Nov 94 10:14:20 -0600

From: adams@chuck.dallas.sgi.com (chuck adams)

Message-Id: <9411181614.AA05028@chuck.dallas.sgi.com>

Subject: Fox Hunt

To the Newbies,

The "Fox Hunt" is my idea and I am sorry that I pushed it on the world. :-)

Here's a short form. A "Fox" whose call and date and time (2 hrs) will come on 40M and your job is to work them. The station that works the most Foxes gets a prize of one kit from NN1G, either a NE30-40 or NE40-40 as seen in Nov QST.

The kit has been paid for and waiting for the final results. This goes once a week until March at which time I will announce the winner. Judge's decision is final.... :-)

The freqs are usually 7.110 for 30M to let the Novicii and Techs+ work 'em and then move to 7.040MHz for the "big" guns.

We're shooting for QRP both ways, but that's not necessary for the hunter. The Fox will be QRP. So it's a propagation, antenna, receiver, operator, and all the other variables rolled into one.

Don't take this too seriously. It's cheaper to go buy the kit. :-)
It (the hunt) was created to give us something to do during the long winter nights when the wind is howling outside and the final 2N3553 is warming our hands with all that power flowing through it. :-)

You will note is a middle of the week event when we don't have to compete with all the big contests on the weekends.

dit dit
SIG
Chuck Adams K5FO CP-60
adams@sgi.com

From owner-qrp-1@netcom.com Sat Nov 19 00:40:14 1994
From: mont@netcom.com (Mont Pierce)
Message-Id: <199411190438.UAA05926@netcom15.netcom.com>
Subject: Re: Fox Hunt
Date: Fri, 18 Nov 1994 20:38:21 -0800 (PST)

> To the Newbies,
>
> The "Fox Hunt" is my idea and I am sorry that I pushed it
> on the world. :-)
>
> Here's a short form. A "Fox" whose call and date and time
> (2 hrs) will come on 40M and your job is to work them. The
> station that works the most Foxes gets a prize of one kit
> from NN1G, either a NE30-40 or NE40-40 as seen in Nov QST.
...snip...
> You will note is a middle of the week event when we don't have
> to compete with all the big contests on the weekends.

I think it is a great idea Chuck. You've given some of us the
incentive we needed to actually get on the air and make a contact.

Last wednesday was my first qso in a while and my first cw qrp
contact. I don't have a qrp rig for 40m yet, so I improvised...
I used my Techno Whizzy DDS VFO for xmit and my ts-520 for rcvr.
The DDS VFO is not well shielded at all, I have to turn it off
to hear anything from the receiver.

My VFO is also attached to an amp, but it barely puts out a watt
or two. Glad to hear that the hunter doesn't have to be qrp, next
time I'll xmit with the TS-520 if I can't make it with 1 watt.

Thanks again Chuck for the idea, and thanks to Dave for the QSO.

72,
km6wt
--
Mont Pierce

+-----+
| Ham Call: KM6WT Internet: mont@netcom.com |

| bands: 80/40/20/15/10/2 |
| modes: cw,ssb,fm |
+-----+

From owner-qrp-1@netcom.com Fri Nov 18 17:15:07 1994
Message-Id: <199411181919.0AA03677@latour.bellcore.com>
Subject: help
Date: Fri, 18 Nov 1994 14:19:13 -0500
From: "\"\"Magnus G. Krampell\"\"\" <magnusk@latour.bellcore.com>

help

From owner-qrp-1@netcom.com Fri Nov 18 02:31:42 1994
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: HW-8 core info; long file
Date: Thu, 17 Nov 94 23:51:49 EST5EDT
Message-Id: <1994Nov17.235149.1092@wb3ffv.ampr.org>

BAD HW-8 OUTPUT CORES

Michael A. Czuhajewski WA8MCQ
7945 Citadel Drive
Severn, MD 21144

Here's the "reprint" of my QRP Quarterly article on the subject.
Unfortunately this isn't exactly as it appeared in the QRP Quarterly;
the note at the head of the disk file says it isn't the final version
sent in--that was done at work on a different computer and I no
longer have the disk, but this has most of the info. (No graphics
included here--sorry, I hate ASCII art!) I went back to the printed
article and updated this, so it's reasonably complete. This
originally appeared in the October 1992 QRP Q, and much-condensed
versions later appears in QST Hints & Kinks and SPRAT (GQRP).

Note to WA7NTF, AB4EL and anyone else who is so inclined--you may put
this article in your QRP files for FTPing or whatever.

--WA8MCQ, 17 Nov 1994

A couple years ago, W8KYD sent me his HW-8 for repair after a nearby
lightning strike. Among other things, it had very low output on both
40 and 80 meters, a quarter and half watt respectively. I tried
tuning everything up to no avail, followed by extensive
troubleshooting over several weeks, and nothing made much sense. I

even went so far as to put my own HW-8 beside it, and transmit with parts of both rigs--his VFO feeding my mixer, driver and amp, his mixer feeding me, etc. Everything kept pointing to the area of the final amplifier, and I finally gave up in desperation and replaced the toroid coils in the matching network, even though toroids never go bad. WRONG! The output shot up to normal, and I had to admit the unthinkable--the cores themselves were bad, something I would never have suspected. Toroid cores NEVER go bad! (Famous last words...)

The permeability of the cores had increased for some reason, perhaps from a surge due to the lightning strike, thus increasing the inductance. This in turn shifted the tuning ranges down below the bottom of the amateur bands; no problem if you have a license to transmit on, say, 3.1 or 6.7 MHz, but few of us have one of those! Permeability of both powdered iron and ferrite toroids will change if they are overloaded. However, when they cool, powdered irons will return to approximately the original value, while ferrites will not. (See the Idea Exchange in the July 1990 issue of the QRP Quarterly, "Cooking With Toroids", which reported some experiments I did along those lines.) The HW-8 happens to use ferrites on 80 and 40 meters, with powdered irons on 20 and 15, which may explain why the latter bands were still good.

When I put the 80 and 40 meter coils from my HW-8 into his rig, both bands came up to normal output. Next, I peeled off two turns each from his 40 meter coils to reduce the inductance and put them back in--the output went up a bit from the original quarter watt. I peeled off a few more and the output was even higher. However, as I peeled off turns, his cores started running warm to the touch.

THE CURE

I wound new coils on fresh cores of the proper type, with the original number of turns, and his rig then put out normal power on both 80 and 40. The output nets on both bands use type 63 ferrite, which seems to be relatively uncommon in ham use. It has a permeability of 40, much lower than the commonly used 43 and 61 mixes (which are 850 and 125, respectively).

COILS IN HW-8 OUTPUT NETS:

Band	Coil	Nominal inductance	Core
80	L26	15.5 uh	FT37-63
	L27	27.5 uh	FT50A-63
40	L28	7 uh	FT37-63

For those not familiar with the FT50A-63, it's the same as an FT50-63 except that it's taller. As with all "A" cores, the inner and outer diameters are the same as the "regular" cores of the same type, as is the permeability. However, the Al factor is greater due to the increased cross section of the "A" core.)

I later received an HW-8 from KM4ZH, another QRPer, which had low output on 80 meters only. Once again, it was a bad set of toroids in the output network, and some new ones fixed it right up. Interestingly, I did not get full power at first when I put in a fresh set. Wound with the same number of turns as the old one, the new L27 didn't allow much more than a watt output. I had to peel off several turns before it reached full power. Variations in permeability between nominally identical cores accounts for this, so be prepared to experiment a bit with the number of turns.

VERIFYING THE PROBLEM

Originally, I would have thought that bad toroid cores would be quite rare; however, as of June 1992, over two years into this, I have 7 confirmed cases (one DX and 6 domestic) of low power on 80 and/or 40 being cured by new toroids. It's almost a religious quest with me now; every time I hear of someone locally who has an HW-8, I offer to check it out for them and tune it up, just so I can get the chance to search for more bad cores to prove that it's not a fluke. (By the way, I've checked at least 15 HW-8s and none had low power on 20 and 15 attributable to bad cores.)

If you have low power on either of these bands, try all the usual things first, such as aligning the rig, checking for shorts and opens on the circuit board, cleaning the bandswitch contacts with spray cleaner, etc. If it doesn't respond to these, then suspect bad toroids in the amplifier output.

To confirm your suspicions, put an RF probe or scope on the collector of the 2N4427 final amp (Q9) and read the voltage while transmitting into a dummy load. If it is substantially lower on the band(s) with the low output, then the problem is somewhere before the final amp--there isn't enough drive. If the voltage is about the same as the other bands, yet the output is quite a bit lower, give the coils the evil eye--the power is being generated but isn't making it past the network.

(table---)

Peak voltages seen in bad HW-8:

Band	Collector of Q9	Output to 50 ohm load	Output power
80	18	7.06	0.5 watt
40	18	4.9	0.24
20	18	12.09	1.46
15	14	11.76	1.38

Putting the coils back on the board is a real pain, since the tuning capacitor gets in the way. You can take the front panel off to remove the cap, but here's a better method. Take two pieces of very small wire about a foot long. Stick the ends through the holes, from the foil side of the board, and push up past the components. Solder the coil leads onto them with a lap joint, and pull it down into place. (You may need to enlarge the holes slightly for the solder junctions to pass.)

BIG VOLTS IN THE LITTLE GREEN BOX

Unlike newer QRP transmitter designs, the HW-8 does not use a low pass filter after the transistor; it uses the output network shown in Figure 1. [not included in this electronic article] (The input capacitor to ground is only used on 80 and 40 meters.)

Surprisingly high voltages are present within the network, which has some high impedance points. For example, with a good HW-8 running well over 1.5 watts output to a dummy load I checked the voltages at various points, using a Tektronix 465B scope and X10 probe and saw the peak to peak voltages below. (It was necessary to retune for maximum output every time the probe was moved, due to its small but finite capacitance affecting the network.) These are similar to those seen in other HW-8s on these bands.

Yes, that really IS four hundred and ten volts peak to peak on 80 meters, or 205 volts peak and 145 volts RMS. Nonbelievers are invited to verify this for themselves with a high impedance probe. Lacking that, you can touch one lead of a neon bulb to the circuit board and watch it light up. The other voltages may not be enough to fire a neon, depending on the particular bulb used. During one test, a 22K resistor placed from Point D [rotor of front panel transmit tuning cap] to ground reduced the voltage at the antenna connector from 28 volts P-P to 22 volts.

table--

PEAK TO PEAK VOLTAGES SEEN IN HW-8 OUTPUT NETWORK

BAND	A	B	C	D	E
80	37	144	87	410	28
40	34	116	58	160	26

[Point A is collector of final amp; B is at the left side of the left coil in the net; C is the junction of the two coils; D is the right side of the right coil, also the rotor of the front panel cap; E is the stator of the tuning cap, which also appears at the antenna connector]

Voltages were lower on the other bands and not as impressive, but still rather high. Note that the highest voltage is at Point D, which is the rotor of the loading capacitor. If you take its knob off, you'll see that the last half inch of the shaft is plastic, not metal, for safety. Be careful where you put your fingers while transmitting with the covers off. You may not get fried, at this power level, but I'm sure you'll feel it!

For comparison, I checked a kit version of the W7EL Optimized QRP Transceiver (from Small Parts Center, which is no longer in business). That rig uses a 5-pole low pass filter between the output transistor (2N3553) and antenna connector. Running close to 2 watts output on 40 meters, I saw about 28 volts peak to peak at the collector of the 2N3553, in the center of the filter, and at the output.

USE THE RIGHT TYPE CORE!

You may make one substitute for the type 63 material--type 67 has the same permeability and is an improved mix, and is replacing type 63. Otherwise, do not make substitutes. Since I was too lazy at first to order the type 63/67 cores, I tried an FT37-61 since I had some on hand. It has higher permeability, and I calculated that only 11 turns were needed to give the necessary 7 microhenries for L29 (40 meters). For L28, I used the good coil from my own HW-8. Although it had the proper inductance, the -61 core only gave about a quarter watt output, and after 10 seconds it was almost too hot to touch! Obviously it was not the proper mix for this application. Avoid the temptation to use what's already on hand, and take the trouble to get the right cores.

I compared some bad cores with fresh ones, using a Hewlett-Packard 4276A LCZ meter at a test frequency of 1 KHz. (The number of turns used here is different from those used in the HW-8.)

FT37-63 cores, all 20 turns #28 wire:

Core 1, bad, 9.9 uh

Core 2, bad, 9.0 uh

Core 3, bad, 10.0 uh

Core 4, fresh, 5.7 uh

FT37-63 cores, both 15 turns #28 wire:

Core 5, bad, 5.5 uh

Core 6, fresh, 3.2 uh

FT50A-63 cores, all 20 turns #26 wire

Core 7, bad, 13.0 uh

Core 8, bad, 12.5 uh

Core 9, fresh, 10.5 uh

Core 10, fresh, 10.3 uh

When I fixed HW-8 number 6, I put the old coils on one of my Boonton 260A Q meters to check their specs. The nominal value for the 40 meter coils is 7 uh each; both of these coils measured about 10.1 uh, with Q values of 186 and 196 at 7.9 MHz. I pulled a few turns off each one to reduce them to approximately 7 uh, and the Q values stayed about the same. By comparison, a pair of new coils wound on fresh FT37-67 cores and trimmed to 7.0 uh had Q values of 300 and 337. (I checked them at 7.9 MHz since that is one of the "standard" frequencies on the 260A at which inductance can be read directly from a scale on the variable capacitor dial.)

As I mentioned earlier, there are many things that can cause low output on 80 and/or 40, and bad toroids are only one of them. However, having had 7 confirmed cases so far I think it's safe to say that it's not all that rare. If you have the output problem and all else fails, don't put on a fake-nose-and-eyeglass disguise and sell your beloved HW-8 at the next hamfest--try replacing the cores first and you might get a pleasant surprise.

--QRP--

Michael A. Czuhajewski WA8MCQ
7945 Citadel Drive
Severn, MD 21144

--

Mike Czuhajewski, user of the UniBoard System @ wb3ffv.ampr.org
E-Mail: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org
The WB3FFV Amateur Radio BBS - Located in Baltimore, Maryland USA
Supporting the Amateur Radio Hobby, and TCP/IP InterNetworking

From owner-qrp-1@netcom.com Fri Nov 18 02:38:27 1994
Date: Thu, 17 Nov 94 23:30:51 -0600
From: adams@chuck.dallas.sgi.com (chuck adams)
Message-Id: <9411180530.AA04277@chuck.dallas.sgi.com>
Subject: Iambic vs Single Lever

Gang,

Once again we branch off from the QRP world, but what the hey! Someone asked and it doesn't hurt to stop and explain this to the next kids on the block. I kinda feel like the Centipede and the spider. The spider comes up to the Centipede and asks, "Which foot do you move first?" and at this point the Centipede rolls over into the ditch trying to think about it. :-)

The single lever paddle behaves in a manner not like a bug, a.k.a. Vibroplex paddle. You push one way and you get a dah and to send several in a row you just hold the paddle in that position for a keyer. This doesn't work in this manner for a bug.

Same for the dit side. Just hold it down and the dits just flow from the keyer. Works in a similar manner for the vibroplex paddle, but it's mechanical and it will die down.

With a single lever paddle, you can not get both sides, i.e. the dit and dah to make contact simultaneously. Think about this and you can understand the physics very easily.

The generation of each letter of the alphabet will take a certain number of movements. I'll count these later.

For the Iambic Paddle you have two moving paddles with independent motion and independent contacts. It is possible to have both sides closed (both making contact) at the same time. When both contacts are closed and using an iambic keyer, the dits and dahs will alternate.

I'm going to do the letter 'F' in detail and it's left as an exercise for the student to do the remaining characters. You start by pushing the dit paddle and holding it down. After two dits have sounded and while still holding the dit paddle closed you depress the dah paddle and release and then after or during the last dit you release the dit paddle. OK? Well, this only takes two movements, one for the dit paddle and one for the dah.

For the single lever paddle - you push the dit side and hold for two dits and then push the paddle in the opposite direction for the dah and then push back for the final dit. A total of three movements boys and girls. :-)

By the way, because of the way Vibroplex and other "bug" manufactures did it, for right handed individuals the dit side of the paddle was pushed with the thumb of the right hand and the dah was done with the first finger. It's just historically that way and you can wire up your paddle and keyer anyway you see fit. It's just that when you sit down at another station, like at field day, you'll be in trouble unless you brought your own paddle with you.

Now there are some timing issues here, but again I don't want to write the book on this. I assure you that if you ever want to get to high speeds using a paddle, you gotta go with Iambic Keying. Here's why.

Critter (letter)	Iambic (# moves)	Single Lever (# moves)
-----	-----	-----
a	2	2
b	2	2
c	2	4
d	2	2
e	1	1
f	2	3
g	2	2
h	1	1
i	1	1
j	2	2
k	2	3
l	2	3
m	1	1
n	2	2
o	1	1
p	3	3
q	2	3
r	2	3
s	1	1
t	1	1
u	2	2
v	2	2
w	2	2
x	3	3

y	2	3
z	2	2
numbers	2	2
comma	3	3
period	2	6
slant	3	4
question	3	3

Note that for the letters, "p" and "q" are the only two that require more than 2 motions to complete. Neato!!

And there other characters, but you can see that there is more movement required for a single lever paddle. With close spacing and light tension a good iambic operator can do over 40 wpm. Don't ask me to do it, as I use a keyboard at high speeds. I never claimed to be super at a key, just copying. I waited too long to give up the Vibroplex Deluxe Bug, the chrome plated with jewel bearings. I wasn't going to give in to this new fangled T0 keyer. :-) That was the one with tubes for you young people in the crowd. Made by Hallicrafters.

I refer you all to Chapter 19 of the 1994 ARRL Handbook, starting page 19-2. Don't look at the dots and dashes. Remember Code is a "Sound Language" not sight. Page 19-4 has all the timing information including the formula

$$\text{speed(WPM)} = (\text{dits/min})/25$$

The ARRL recommends a rise and fall time of 5 mS. I like 2.5 mS or a hair less. To me it's too soft at more than 5 mS.

In column 3 is a discussion of QSK, where you can receive between the elements (depending upon response time). I have heard some people say that they just don't like QSK, but it's just like listening to a signal, you hear noise between the elements and you hear QRM, etc. It may take getting used to, but once you have it you won't give it up.

OK, now we got that outta the way. I have never seen a pictorial or mathematical description of the timing needed for Iambic Keying. There is flexibility and for that reason, you can be sloppy on the timing (not a whole lot) and still get perfect code out of the keyer.

OK, now over to chapter 29 of the 1994 Handbook (you do

have one of these don't you?). There's the simple Iambic keyer, but several guys have ideas for smaller, cheaper, and better ones. Stay tuned for their ideas and results. The next one, which is the one everyone likes, uses the Curtis chip 8044ABM. But we're looking at \$5.75 for the board and another \$19 or so for the chip.

Page 29-4 answers the long and many times asked question what is the difference between 'A' and 'B' modes? With the type A keying, when the paddles are released that's it. No more is sent. In the B mode, if both paddles are released simultaneously in the middle of an element, the opposite element is sent. The B mode is the preferred mode of most Iambic CW Operators, including yours truly.

One thing. Once you give up the Vibroplex Bug, you'll be ruined if you try to come back. Some people can go from one to the other, but I get the paddle out of the display case and then I put it back. I just can't do it any more.

Page 29-6 starts the famous CMOS Super Key II article and never mind my previous post asking for a copy of the manual. The commands are listed on page 29-9. Let's see someone emulate this puppy for under \$20. The \$50 price tag from Idiom Press isn't all that bad considering what the keyer does and does well.

OK, sorry for the dissertation, but we are here to learn. Please don't repost this to this group. It's just too long. Everyone has a copy. Feel free to distribute to BBSs and clusters, if there is any interest. It's not perfect, but it is a start. Try it (Iambic) - You'll Like It!!!!!!

dit dit (1 Iambic move) :-)

SIG

Chuck Adams K5FO CP-60
adams@sgi.com

From owner-qrp-1@netcom.com Fri Nov 18 17:18:07 1994
Date: Fri, 18 Nov 1994 13:45:54 -0330 (NST)
From: Robert Gobrick <bgobrick@random.ucs.mun.ca>
Subject: Re: Iambic vs Single Lever
Message-Id: <Pine.3.87.9411181354.E7337-0100000@random.ucs.mun.ca>

Keyers 101 - Question from the students:

Question Mr Chuck Sir - I noticed in the Super CMOS keyer firmware that I have (late version) that the authors/designers of this key add a "timing" twist to the standard Curtis B type timing. I don't have my keyer manual handy but if I recall it has to do with how the characters are completed when sending (ie timing between letters and words).

Can you elaborate on what they're saying/doing?

"Stump the Professor" question

From owner-qrp-1@netcom.com Fri Nov 18 18:53:12 1994
Date: Fri, 18 Nov 94 12:22:07 EST
From: hysell@itc.Kodak.COM (John D. Hysell)
Message-Id: <9411181722.AA29722@runner.itc.Kodak.COM>
Subject: INET keyer

Stephen Shearer listed old QST articles with ttl keyers (Thanks Steve!).

I ran off and dug up my old issues, and sure enough there they are. -Main concern I have with the ttl approach is size. These suckers are BIG! Bigger than I can afford to squeeze into my QRP rigs...

Nice thing about the CURTIS chip - it makes for one small PCB. I am going to knock off one of the ttl designs, and see how it behaves on my home QRO rig. -If it works well enough, I will steal the CURTIS keyer I use now, and build it into a portable case for travelling and QRP...

I will report back (eventually - lot's of other pokers in the fire just now).
73 de KF2XC
-John
hysell@kodak.com

From owner-qrp-1@netcom.com Fri Nov 18 13:35:18 1994
Message-Id: <9411181446.AA22832@us4rnc.pko.dec.com>
Date: Fri, 18 Nov 94 09:46:35 EST
From: "N100Q Tom R. @ MR01 18-Nov-1994 0931" <randolph@est.enet.dec.com>
Subject: Re: Intro

> I think it is incredible and fantastic that you went from zero to General
> in one day.
> 73 =paul= wb8zjl

You'd be surprized. There's a current thread in rec.radio.amateur.misc about that - not all that uncommon for someone to go from 0 to Extra! Not that this takes any glory away from such a feat!

I went from Tech+ to Advanced myself, in one step, about a year ago...

QRP stuff: I fixed my 40m tx's output network. I think I'll get just about the 3W out that it's set up for. Class C amps are strange critters. Matched to the naked base of the transistor, the transformer windings worked out to 50:16 ohms, but I was driving it too hard. With a 51 ohm shunt on the base, it's now something like 50:3.5 ohms. 51 in parallel with 16 != 3.5...?

-Tom R. N100Q randolph@est.enet.dec.com

From owner-qrp-l@netcom.com Fri Nov 18 13:44:41 1994
Message-Id: <9411181442.AA06022@nms1.abb.com>
From: Tom_Jennings <jennings@eng16.rochny.uspra.abb.com>
Subject: Irrigation Pipe
Date: Fri, 18 Nov 94 9:42:41 EST

Hi all,
I am thinking about building a veritcal and the plans require using 2" irrigation pipe. So does anyone know where I can buy it in the Rochester, NY area??

Thanks and 73,

TJ, kv2x

--

Thomas J. Jennings | Tel: (716) 273 7071
Development Engineer | Fax: (716) 273 7262

|
ABB Process Automation |
Post Office Box 22685 |
Rochester, New York 14692-2685

Internet: jennings@jennings.rochny.uspra.abb.com

From owner-qrp-l@netcom.com Fri Nov 18 19:53:14 1994
Date: Fri, 18 Nov 94 17:59:10 -0600
From: adams@chuck.dallas.sgi.com (chuck adams)
Message-Id: <9411182359.AA05639@chuck.dallas.sgi.com>
Subject: It's Here!!

Gang,

I stopped at the old Texas Towers (actually it is a drive out of the way home, but not sacrifice too large...) to see what was new and low and behold the brand spanking new 1995 ARRL Handbook for Radio Amateurs is out and it's huge and it's not light reading either. :-)

For \$30 USofA you get one heck of a deal. It's a paperback, thus there is no hardcover anymore. Guess the cost of production overran demand for same. Save the 1994 gang if you want hardcover.

In chapter 17, NN1G's Mark II schematic and parts list is included with information to write, call, or email ARRL for information packet. This is the same rig that we've discussed over the past year or so on this group.

For the Newbie's, NN1G has two versions of what we call the NN1G xcvr. The first one was published Jan of last year in the QRP ARCI Quarterly. The second version, called the Mark II, was published in the Jan '94 issue of the QQ (as it's called among it's membership and the knowledgeable). Then there is the reduced version produced by the New England QRP Club called the NE30-40 for the 30M version and NE40-40 for the 40M version.

It's this later version, written up in the November issue of QST 1994, that has been getting a lot of postings on this group in the past few weeks with drift, L1 windings, IF Frequency, and all that technical stuff. It's this version that is available for \$50 from Dave at the address posted in QST.

For those of you who like to be challenged, there is a 30/40W SSB/CW 20M Transceiver immediately following NN1Gs that was designed and built by Zack Lau, KH6CP/1. It really looks like a difficult project and it is work in progress.

The Curtis Keyer and the CMOS II are still in the book in Chapter 22. The command summary chart that I mentioned the other day is now gone. Good thing I found it in the other 1994 book. :-)

I'll be carrying the book (with highlighter) on the plane tomorrow (Sat) for a trip to San Francisco to Sausalito for three days for a meeting. This is my LAST trip for the year. I have been on the road for five weeks and enough is enough. :-)

Good luck to the hunters on Monday night. Wish I could be there. I'll post a summary of the scores mid week when I get back.

gl es dx

dit dit

SIG

Chuck Adams K5FO CP-60

adams@sgi.com

From owner-qrp-l@netcom.com Fri Nov 18 22:23:57 1994

Date: Fri, 18 Nov 94 17:03:54 MST

From: miker@cc.com (Mike Robinson)

Message-Id: <9411190003.AA16651@cc.com >

Subject: Keyers 101

In response the 'Stump the professor question'

>From the kid in the back row, with his hand raised high...

"Ooooh, Ooooh, Mr. Bobrick, Mr. Bobrick, I know, I know."

=====

7.3 de Michael aa0ub (formerly kd6wdd and kg0ot)

miker@cc.com ---==<< I'm the last 'S' in KISS >>==--

=====

From owner-qrp-l@netcom.com Fri Nov 18 05:30:06 1994

Date: Thu, 17 Nov 1994 23:55:13 -0800 (PST)

From: Monte Stark <msswmod@sage.unr.edu>

Subject: Re: keyers/touch keys

Message-Id: <Pine.SUN.3.90.941117235257.29153B-1000000@nimbus>

Hi Joe,

I build a "touch" paddle years ago. Never did work the same way twice. Tried putting a "ground plate" under my hand. That helped, but would still have to lick my fingers now and then. Summer was worse than winter.

Turn up the gain and they would "stick" on!

Love my Benchers.....

73's, Ron

.....KU7Y.....

.....Monte "Ron" Stark.....
.....Sun Valley, Nevada.....

From owner-qrp-l@netcom.com Fri Nov 18 23:56:11 1994
From: K7YHA@aol.com
Date: Fri, 18 Nov 1994 21:22:35 -0500
Message-Id: <941118211453_2604265@aol.com>
Subject: Low Pwr Comm Vol-III

Hi Gang:

Vol-III QRP Hardware is about ready to go to the publisher. I have an urgent need to GOOD quality Black & White photos of the following QRP equipment:

1. FT-7B
2. FT-3012 (plus any accessories)
3. Argo 505
4. Argo 535 (Argo-II)
5. T-T Scout model 556 (QRP version)
6. Index Labs QRP Plus
7. A&A Eng QRP Xcvr
8. MFJ 9020 Xcvr & tuner
9. TS-130V (plus accessories)

Anyone who has some photos please contact me at k7yha@aol.com ASAP! :You will receive full photo credit and my eternal gratitude.

In October I heard a rumor that T-T had discontinued their Delta-II and Argo-II as of the end of Sept. Last week I heard (from another source) that the Argo-II was still in the product line and that the Delta-II had been discontinued. Anybody have any SOLID info on this?

72 Rich

From owner-qrp-l@netcom.com Fri Nov 18 15:37:54 1994
Date: Fri, 18 Nov 1994 11:31:24 -0500 (EST)
From: wynn c c <wyn@stc06.CTD.ORNL.GOV>
Subject: MORE CHEAP KEYERS
Message-Id: <Pine.OSF.3.91.941118110555.10003A-1000000@stc06.CTD.ORNL.GOV>

I used a homebrew keyer designed by Erich A. Pfeiffer WA6EGY from an article in 73 mag. back in 78? until I switched to the CMOS Superkeyer II. It used seven RCA CDxxxx series 14 pin DIP CMOS chips, perf board, and point to point wiring. Had gated clock, dot and dash memory, and iambic keying, speed control, sidetone, etc. No on/off switch (one 9v transistor battery lasted over a year). I left off the sidetone circuit, and fit the entire thing on a 2"x4" perf-board.

Still works great. I guess the chips are now obsolete. If anyone has a good source or wants to convert the logic to other CMOS series, I

would be glad to mail out the construction info.

one 4011 quad 2-input NAND		
two 4081 quad 2-input AND		
one 4013 dual D-type Flip-Flop		may be hard to find now.
one 4024 7 stage binary counter		
one 4071 quad 2-input OR		
one 4001 quad 2-input NOR		

one 2N5400 or equiv PNP - keying transistor
one 2N4142 or equiv NPN - sidetone transistor

a few readily available capacitors, resistors, and pots, perfboard and hookup wire.

72/73,
Clay, N4AOX
wyn@ornl.gov

From owner-qrp-1@netcom.com Fri Nov 18 16:27:52 1994
Date: Fri, 18 Nov 1994 12:02:25 +0800
From: Raymond.Anderson@EBay.Sun.COM (Ray Anderson)
Message-Id: <9411182002.AA02042@uranium.EBay.Sun.COM>
Subject: Re: MORE CHEAP KEYERS

Clay, N4AOX writes:

...comments deleted...

> Still works great. I guess the chips are now obsolete. If anyone has
> a good source or wants to convert the logic to other CMOS series, I
> would be glad to mail out the construction info.

>
> one 4011 quad 2-input NAND |
> two 4081 quad 2-input AND |
> one 4013 dual D-type Flip-Flop | may be hard to find now.
> one 4024 7 stage binary counter |
> one 4071 quad 2-input OR |
> one 4001 quad 2-input NOR |

....comments deleted....

The 4000 series CMOS logic is still alive and well. National, Panasonic and Harris are some of the people still producing this logic family. The total cost of the above 4000 series CMOS chips comes to

about \$3.42 according to the Digikey catalog!

73 de Ray WB6TPU

From owner-qrp-l@netcom.com Fri Nov 18 02:24:58 1994
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: More core info; long one
Date: Thu, 17 Nov 94 23:52:14 EST5EDT
Message-Id: <1994Nov17.235214.1092@wb3ffv.ampr.org>

17 Nov 1994--Here's some more info from the Idea Exchange in the QRP Quarterly dealing with bad HW-8 cores. This is all mine, except for one portion written by Dave Benson, NN1G.

--WA8MCQ

>From the April 1993 Idea Exchange in the QRP Quarterly--

FOLLOWUP ON BAD HW-8 OUTPUT CORES

The October 1992 issue of the Quarterly contained my article on the output cores going bad and lowering power on 80 and/or 40 meters. I included the results of some tests of the FT37-63 coils, both good and bad, on a Q meter. Since that time I fixed the 8th HW-8 with this problem (see, it's NOT an isolated incident!), and did some tests on the FT50A-63 coil. (That's L27, the larger of the two 80 meter coils.)

Nominal value of L27, per HW-8 manual: 27.5 uH
Bad L27, measured at 2.5 MHz: 35.2 uH, Q 220
Good L27, wound on fresh FT50A-67 core: 27.0 uH, Q 360

The new coil was wound with the same number of turns as the original. The inductance came down to the correct value, and there was a dramatic increase in Q. (Measurements were done at 2.5 MHz, one of the frequencies at which inductance can be read directly off the dial on the Boonton 260A Q meter.)

The 40 meter cores from a previous HW-8 both measured 10.1 uH at 7.9 MHz (another "standard" frequency on the Boonton) with Q of 186 and 196. Coils wound on fresh FT37-67 cores were trimmed to the nominal 7.0 uH, and their Q values were 300 and 337. (Although the original core material for the 80 and 40 meter coils is type 63, type 67 is a replacement for it and may be used.)

>From the July 1993 Idea Exchange--

COMMENTS ON WA8MCQ'S "BAD HW-8 CORES"

>From Dave Benson, NN1G, our technical editor--The changes in ferrite characteristics referred to in Mikes article, "Bad HW-8 Cores" stems from core overdrive. In the olden days, ferrite cores were deliberately driven to saturation to provide non-volatile storage (remember core memories?). Dad--tell us again what it was like in the Mesozoic era!

Figure 11 [not included here] shows the relationship between current through a core winding (H) and the resultant magnetic field density (B). In normal applications, the ferrite core starts its life at the origin "0". When operated out to the point P1, the core follows the path associated with P1 thereafter. The harder the core is driven, the closer to the corners (P3) the core operates, and the more the permeability is "permanently" shifted as the core adopts a new operating path. Permeability is the slope of this operating curve, so the ferrite has taken on a new effective value. The core isn't really damaged--it's just gone to live in a bad neighborhood! Unfortunately, the only way to get the core back to its birthplace is to bake it at high temperature. (Replacing the fool thing seems easier, somehow!)

I'd guesstimate that for a typical ferrite core a high current spike in the amperes range would be sufficient to cause the permeability to shift appreciably. Assuming your rig uses a high current power source like a storage battery, simply touching a grounded probe to the wrong point while the circuit is under power could cause this effect. (As a bonus, of course, you get smoke; this is known as the "Real Men Don't Use Fuses" school of design.) The lightning-induced surge damage that prompted Mikes investigation is also a very plausible cause for this phenomenon.

--DE NN1G

DELIBERATELY ZAPPING SOME PERFECTLY GOOD CORES

>From me, WA8MCQ--Naturally, I couldn't resist giving this one a try--deliberately hitting a core with a huge overload to see what would happen. I had a lot of fun and wrote a nice piece on my experiments, but then lost it. Through one of those freak accidents that happens sooner or later to everyone with a computer, about two weeks before my deadline for this issue I found out that the entire column had been obliterated from the main disk and the backup as well. Only two paragraphs remained, so here's a condensed version

rewritten at the last minute, pieced together from memory and notes.

The basic idea was to wind several turns on various cores, charge a capacitor of tens of thousands of microfarads with a power supply, then short the coil across it. The capacitor would insure a healthy current spike. (This technique is from the "Hit 'Em with a Mack Truck Doin' 90" school of experimentation.) Inductances would be measured before and after. I tried a variety of voltages as high as 15 but eventually settled on 5V as my standard value, for no reason in particular; I found out it didn't make any difference if I used higher voltages. (It's like asking the death row inmate if he wants his electrocution to be done with 500 volts or 2000--the end result is the same either way.)

First, I took an already-bad FT50A-63 which came from an HW-8 output network, the eighth one I cured. I used it as-is, with the original wire still on it. Measurements were taken at 2.5 MHz on my Boonton 260A Q meter for this one; the results--

Bad core before zapping: 35.5 uH, Q 215

After zapping: 38.2 uH, Q 153

Fresh core, same # of turns: 27 uH, Q 360

Next, a good FT37-67 core, a type also used in the HW-8 output nets on both 80 and 40 meters. I put 19 turns of #24 wire on it, and measured 6.19 uH at 7.9 MHz, with a Q of 307. Zapping it with 5 volts from the cap made it jump to 10.97 uH, while the Q plummeted to 45! I cranked the voltage on the cap up to 15 but it didn't make the core any worse than it was. (This is the "Mack Truck vs. Freight Train Comparison.") I tried 15V again with reversed polarity, which made no change in the measurements, although the magnetic flux lines would be reversed. I tried zapping it several times with a lower voltage each time, with negative results.

How about an FT50-61? Interestingly, the inductance on this one went down for some reason, from 23.7 to 19.4 uH, instead of increasing like the others did. The Q dropped from 153 to 108. This was the only core tested which showed a decrease in inductance. An FT37-61 tested later showed the expected increase; I don't THINK I reversed the figures when I wrote them during the experiments, but a decrease sounds fishy.

I tried an FT50-43 with similar results. I couldn't measure the Q, since it wouldn't give a reading on the Boonton; I had to use a borrowed LCR meter instead, which measures inductance with a 1 KHz tone. Unfortunately I couldn't find my notes for this one, but it too showed a significant increase in inductance.

Is this phenomenon limited to ferrite cores with high permeability (ui)? Obviously not, since the type 63 (or 67) has ui of 40, type 61 is 125 and type 43 is 850. How about powdered irons? Their permeability is much lower, and the material is somewhat different. Conventional wisdom is that powdered irons return to their original value after overload is removed. (For example, see the W1FB toroid article in the June 1993 issue of CQ magazine, and my item in the Idea Exchange in July 1990, "Cooking With Toroids".)

Surprisingly, they exhibited the same permanent shift in inductance (and thus permeability) but to a much lesser extent. I checked type 2 (ui of 10) and type 6 (ui of 8) cores, and they had small but noticeable shifts in inductance and Q. These were done with various amounts of wire and at different frequencies--

T50-2: before, 1.74 uH; after, 1.77 uH

T68-2: before, 3.90 uH; after, 3.94 uH

T37-6: before, 0.725 uH, Q 207; after, 0.728 uH, Q 194

T50-6: before, 2.18 uH, Q 210; after, 2.21 uH, Q 208

My earlier experiments (July 1990 QRP Quarterly) were done with a good quality Hewlett Packard test unit, but I only had readout to tenths of a microhenry. The T37-2 cores which I had cooked read 1.8 uH before and after brutalization. This time I used my Boonton 260A Q meter, which resonates inductance with a well calibrated variable capacitor, with direct readout to 0.1 pF, allowing small changes to be easily observed. The earlier cores had changed, but I was unable to observe it.

Finally, another experiment with the FT37-61 I zapped. It had started at 7.2 uH and Q 340, and was zapped to 12.7 uH and Q 45. Dave had suggested the possibility of restoring cores by cooking them at high temperatures. I desperately wanted to take it to work and run it through the furnace used for firing thick film hybrid substrates, but the clean room supervisor made it abundantly clear that I would NOT put ANY foreign materials in HIS oven. On to the low-tech approach...

While my wife was baking a casserole one night at 350 degrees F, I popped the core into the oven for about 20 minutes (with the wire removed, just in case the enamel insulation might start smoking and stink up supper!). The core then measured 11.27 uH and Q60; not a dramatic change, but measurable. Of course, I had removed the wire and then rewound it, so the turn to turn spacing was somewhat different but I kept it as close as possible. Next, I removed the wire again and slipped the core over the tip of a Weller W60 soldering iron with 700 degree tip. I let it cook for about a minute, then melted a bit of solder on the core to make sure it was good and

warm. After it cooled and I rewound it, the Q had increased a hair or two and the inductance went up to 13.23 uH. At this point I cut it in half with wire cutters and tossed it in the trash; I'd never trust THAT core in any of my circuits!

I have type 0 cores (tan) in a few sizes, but didn't bother zapping them since type 0 material is physically incapable of changing permeability. Although it is usually lumped together with powdered iron, it is actually made of phenolic and contains no iron of any sort. Its permeability, 1, is the same as air. As a Micrometals engineer told me on the phone once, it has the same magnetic properties as a block of wood. The Micrometals catalog makes it clear that it is actually phenolic, and that is also mentioned, but well hidden, in the Amidon toroid book (not their "road map" brochure), on page 44 of the February 1992 edition.

The bottom line? Although I didn't do a great deal of experimentation and there wasn't a great deal of precision, a reasonable conclusion is that ferrites of type 63/67, 61 and 43 can be changed substantially by gross overloads, while type 6 and 2 powdered irons exhibit the same characteristic but to a much lesser extent. In fact, with the latter you probably couldn't tell whether a given core had been zapped unless you had previously measured it and had a basis for comparison. The variations I saw on those were well within the 5% inductance tolerance that Micrometals specifies for them. Although no other types of ferrites or powdered irons were tested (it was starting to get expensive), it is reasonable to assume that all would behave in the same way.

--QRP--

--

Mike Czuhajewski, user of the UniBoard System @ wb3ffv.ampr.org
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The WB3FFV Amateur Radio BBS - Located in Baltimore, Maryland USA
Supporting the Amateur Radio Hobby, and TCP/IP InterNetworking

From owner-qrp-1@netcom.com Fri Nov 18 14:51:15 1994
Date: Fri, 18 Nov 94 09:02:21 EST
From: wendler@tomcat.rd.ray.com (John Wendler)
Message-Id: <9411181402.AA00234@tomcat.rd.ray.com>
Subject: Re: More core info; long one

Just a comment on demagnetizing cores...

I used to work in an area that used a lot of microwave ferrite.
I believe that people used to "ring down" ferrite in pretty much

the same fashion as is described by Mike. If memory serves me correctly, we had a machine that would generate an initially *LARGE* damped sinusoidal magnetic field. The net effect was to spiral in on the B-H hysteresis loop to the center, where the ferrite would behave "linearly" for small signals. It is critical that you wait for the field to go to zero; otherwise you can end up saturated at some other point on the B-H loop.

Baking is also a good way to demagnetize. The key number you are interested in is the Curie temperature. Bake the core above the Curie temperature, and it will be demagnetized. You probably want to go some factor above the T_c , so lot to lot variations don't throw you off. You probably don't want to do this with something that is held together with, or covered with something organic, but most genuine ferrites are fired at a temperature well above T_c and won't be harmed by a T_c bake.

John P. Wendler, P.E.	e-mail: wendler@tomcat.rd.ray.com
Raytheon Co., Research Div.	phone: 617-860-3226
131 Spring St.	fax: 617-860-3194
Lexington, MA 02173	Callsign: N5CQU

DISCLAIMER: Any opinions expressed in the foregoing message are solely the authors and do not represent the position of the Raytheon Company.

From owner-qrp-1@netcom.com Fri Nov 18 14:04:59 1994
Date: Fri, 18 Nov 94 07:56:18 -0700
From: Mark Monninger <markm@bigfoot.sps.mot.com>
Message-Id: <9411181456.AA20163@bigfoot.sps.mot.com>
Subject: Re: NE30-40

Just to throw in some more data about the 30-40 and coil/cap values, I'm about to finish one that I received from Dave a week or so ago. Actually, it's now called the SW-30 (SW for Small Wonder, I think). Anyway, in what seems to be a difference from others, mine has 8.000 MHz crystals which means the LO freq should vary from 2.1 MHz up to whatever, for 10.1 MHz to whatever coverage. To get that I ended up with 26 turns on the core and an 82 pF cap across the coil. That gets 2.1 MHz with the trimmer about half meshed. The instructions called for 27 turns but that made it too low (just barely...it ran at about 1.99 MHz with the trimmer at minimum). From what Chuck tells me, the other 30-40s seem to have xtals at 8.192 MHz. Not a big difference, but enough. At any rate, I expect to finish it up this weekend and give it a complete smoke test, at least spread out naked on the bench (the rig, not me

; -).

73... Mark AA7TA

From owner-qrp-l@netcom.com Fri Nov 18 02:25:41 1994
From: Mat Maessen {tomatoe} <maessm@rpi.edu>
Message-Id: <199411180451.XAA14925@rembrandt.its.rpi.edu>
Subject: Re: NE30-40 Stability
Date: Thu, 17 Nov 1994 23:51:51 -0500 (EST)

Everybody out on the list seems to be talking about these NE30-40 and 40-40 kits...

Whereabouts can one get ahold of one of these?
I seem to remember the price being listed at \$50...

Any specifics?

-Mat

From owner-qrp-l@netcom.com Fri Nov 18 15:02:44 1994
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: Re NE3040/NE4040
Date: Fri, 18 Nov 94 07:25:12 EST5EDT
Message-Id: <1994Nov18.072512.20844@wb3ffv.ampr.org>

Re the recent posting asking about these rigs, that's the one which was in the November issue of QST. It was originally a club project of the New England QRP Club, designed by NN1G, who has now "gone public" with it. That's Dave Benson, 80 E. Robbins Ave, Newington, CT 06111. 73 and Queue Our Pea DE WA8MCQ

--

Mike Czuhajewski, user of the UniBoard System @ wb3ffv.ampr.org
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From owner-qrp-l@netcom.com Fri Nov 18 12:33:05 1994
Date: Fri, 18 Nov 1994 08:27:02 -0800
From: dgf@netcom.com (David Feldman)
Message-Id: <199411181627.IAA10479@netcom14.netcom.com>
Subject: Need advice re using Gel Cells

I ordered some 8AH 2V gel cells, to use for portable operation of a QRP rig. Should I use 6 cells giving 12V or 7 cells giving 14V? Are there any special things to know about recharging Gel Cells? Any other advice? 73 Dave WB0GAZ

dgf@netcom.com

From owner-qrp-l@netcom.com Fri Nov 18 02:48:23 1994
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: Re Q/wire size
Date: Fri, 18 Nov 94 00:30:06 EST5EDT
Message-Id: <1994Nov18.003006.1092@wb3ffv.ampr.org>

Re Bob Gobricks recent posting, no, wire size has very little effect on coil Q, at least within the range of a couple of sizes. This was proven and written up by W7EL in QST long ago, and later proven and written up by me in the QRP Quarterly somewhere. 73 and Queue Our Pea
DE WA8MCQ

--

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From owner-qrp-l@netcom.com Fri Nov 18 02:23:07 1994
From: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org (Mike Czuhajewski)
Subject: QRP Q needs tech editor
Date: Thu, 17 Nov 94 23:52:42 EST5EDT
Message-Id: <1994Nov17.235242.1092@wb3ffv.ampr.org>

HELP WANTED--Technical editor for the QRP Quarterly. This mailing list seems like a reasonable place to start looking, with all the QRPers and technical talent out there, and much faster than waiting until the next issue to print an announcement. Dave Benson says he will be unable to keep the job for the long haul, so I'm now taking "applications" and "resumes" for a replacement. (Why don't I do it myself? I did have it for 3 issues, although my name was only on the mast head as technical editor for one issue; doing that in addition to writing the Idea Exchange column and articles and "having a life" was waaay too much work, so I talked Dave into taking it for a while.)

If interested, please contact me via e-mail, or at work at (410) 290-1919 or home (410) 551-1633. What we need is, ideally, someone who is technically inclined, has been around ham radio and QRP for a while, can write and edit well, has lots of spare time, is computer literate and has a computer, and can put files on diskettes in ASCII. (I think that can be either IBM/MS-DOS or Macintosh; I believe WB9TBU can work with either one.)

Since this mailing list goes everywhere in the world, I should mention that this really should be someone who lives in the US or Canada. Occasional phone calls are required for coordination with

other members of the staff, which can get very expensive if they are international, and using international mail (for receiving inputs and sending out finished products) introduces substantial delays and risk, which are not conducive to timely publication.

It would also be good to have some sort of schematic drawing program for your computer, although that is not mandatory. And those are cheap and easy nowadays. There was an article in QST recently about using one of the functions in Windows ("paint"?) to draw schematics, and commercial products abound. As for me, with a piddly little '286 at home, I use a pretty good \$19.95 program called KeyCAD that I bought at a local Office Depot store. It can be used to draw anything, including schematics, and even comes with a schematic symbols library. (If you get that program, I'll send you a copy of my own symbols library, which is much better.) The NorCal QRPp has been using it for some of their schematics for a while (Doug Hendricks is the one who told me about it) and I started using it in the Idea Exchange in the October 1994 issue. It's fairly easy to use once you get the hang of it. (I do my printouts on a 9-pin dot matrix printer, though it will handle a lot more than that.)

What we do NOT need is someone who is just getting back into ham radio and/or QRP after a long absence and figures doing something like this is a good way to get back into the swing of things, then has to bail out after a few months when he/she discovers it's biting off way too much. This is not necessarily an easy and fun job, and requires a lot of dedication and free time. (Oh sure, at first it will be easy and fun and take very little time, but we all know what that means...lulling you into a false sense of security!)

What sort of physical form do articles come in? I've processed a few that were sent to me and Dave on Internet; some come on diskettes, some come laser printed, ready for scanning or typing in, some are typed or handwritten--all sorts of physical forms, some easy to do, some not so easy--you WILL need to know how to type! And what sort of technical quality and writing ability do you see on the inputs? All over the spectrum; some requires almost no human intervention, and some requires substantial rewriting and coordination with the author.

As for the output side, I've been sending everything on diskettes in ASCII to WB9TBU for years and years, and she takes it from there. (I've offered to send her camera ready copy from time to time, but she prefers to have disk files.) As for artwork and schematics, I'm starting to use KeyCAD exclusively for the Idea Exchange but still have to pass along some hand drawn figures. Schematics I can handle, but I'm not about to attempt redrawing hand-drawn free-form figures on the computer! (I always make photocopies of all artwork I send

in, except for the KeyCAD schematics, which are on disk, in case the postal system or UPS eats things.)

Expenses--you can be reimbursed for your expenses--postage, diskettes, photocopying, etc. That's done by submitting periodic claims to the secretary/treasurer. You'll put in a lot of work but you won't be asked to pay for the privilege. (By the way, you may have noticed I never mentioned the pay; you'll receive the same pay as everyone else who has anything to do with the QRP Quarterly, which is the satisfaction of seeing your name in print! This is all volunteer labor.)

If interested, please contact me by e-mail or at one of the phone numbers above.

73 and Queue Our Pea DE WA8MCQ --

Mike Czuhajewski, user of the UniBoard System @ wb3ffv.ampr.org

E-Mail: Mike.Czuhajewski@hambbs.wb3ffv.ampr.org

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From owner-qrp-l@netcom.com Fri Nov 18 14:39:55 1994

Message-Id: <9411181817.AA23306@esds01.es.dupont.com>

Date: Fri, 18 Nov 94 13:17:29 EST

From: "Steve, WB3LGC" <shearer@eplram.dnet.dupont.com>

Subject: QST Article Bibliography - Keys, keyers and keying

QST ARTICLE BIBLIOGRAPHY - Keys, keyers and keying

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May	QST Versakeyer - A Multi-Mode Paddle Keyer	p. 11
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July QST p. 19
The CW68HC05 Keyboard/Keyer

1993 July QST p. 36
IROESON: An Infared Optoelectronic
Keyer

From owner-qrp-l@netcom.com Fri Nov 18 13:40:32 1994
Date: Fri, 18 Nov 1994 09:41:09 -0500 (EST)
From: wynn c c <wyn@stc06.CTD.ORNL.GOV>
Subject: QUIET RUNNING
Message-Id: <Pine.OSF.3.91.941118091806.2348A-1000000@stc06.CTD.ORNL.GOV>

76 KByte of qrp-l this morning, after editing! Who said qrp-l
has been too quiet lately?

My tip for catching the weak ones:

After you have put up the best xmit/rcv antenna you can manage,
make sure your domicile is quiet running. Go through and make
sure all flourescents are turned off, all computers off, all
brush-type motors are turned off, vacuum cleaners, mixers, drill
motors, etc. Also make sure all TV's and radios (no, not the one
you are using!) are turned off. OK, give the XYL or OM, and other
occupants your credit card and send them off to the galleria.
Whatever it takes.

These little things do not make much difference at QRO, but can
significantly effect the noise floor and be the difference between
clearly hearing the weak ones or not. The technique is particularly
useful for the short run sprints and fox hunts.

72/73
Clay, N4AOX
wyn@ornl.gov

From owner-qrp-l@netcom.com Sat Nov 19 05:11:37 1994
From: rohrwerk@holonet.net
Date: Fri, 18 Nov 1994 21:34:57 -0800
Message-Id: <199411190534.VAA22664@holonet.net>
Subject: R2 current consumption

On 11-16-94 Roger_L_Traylor@ccm.jf.in wrote to qrp-l@netcom.com:

> I'm interested in hearing from anybody that has built Rick

> Campbell's R2 receiver. I finished mine a few weeks ago and it seems
> to work well. I have noticed however that the board current
> consumption cannot be lowered below 160ma. This is a far cry from the
> 100ma mentioned in Rick's article. A quick check of the audio
> amplifier stage revealed no mistakes in component values, solder
> bridges etc. The receiver seems to work well, beautiful audio,
> signals seem to come out of near silence, unwanted sideband rejection
> very good. The output transistors get quite hot, but I can run
> them without heatsinks for up to about 3 minutes before I lose my
> nerve. I can crank the idle current adjustment pot for more
> current(not what I have in mind however!). I can easially go to
> 250ma, but I know this is way too much.

Just reduce the value of the resistor in series with the pot. People seem to have differing experiences with this.

Now, to go a step further... how low can you go? In my experience, the board will not go below about 50 mA of current; and as you listen, you realize you wouldn't want to! Below about 70 or 80 mA, you can start to hear distortion, and even see crossover distortion on a sine wave on your scope.

One guy told me he got his down to 20 mA. Must have sounded like c***.

You don't get something for nothing. If you want low current drain, the tradeoff is grungy audio. Period. Unless you eliminate the final audio stage and use headphon

: John Seboldt rohrwerk@holonet.net / I am Bach of Borg...
: Amateur radio K0JD... / your style will be
: Church of the Annunciation, / assimilated.
: Minneapolis /

-> Alice4Mac 2.3 E QWK Eval:05Mar94

From owner-qrp-l@netcom.com Fri Nov 18 15:43:25 1994
From: Glen Leinweber <leinwebe@mcmail.cis.mcmaster.ca>
Subject: Re: restore bad ferrites
Message-Id: <1994Nov18.123141-0500@[130.113.234.7]>
Date: 18 Nov 1994 12:31:41 -0500

In <1994Nov17.235214.1092@wb3ffv.ampr.org>, Mike Czuhajewski wrote:

>
>While my wife was baking a casserole one night at 350 degrees F, I
>popped the core into the oven for about 20 minutes (with the wire
>removed, just in case the enamel insulation might start smoking and
>stink up supper!). The core then measured 11.27 uH and Q60; not a
>dramatic change, but measurable. Of course, I had removed the wire

>and then rewound it, so the turn to turn spacing was somewhat
>different but I kept it as close as possible. Next, I removed the
>wire again and slipped the core over the tip of a Weller W60
>soldering iron with 700 degree tip. I let it cook for about a minute,
>then melted a bit of solder on the core to make sure it was good and
>warm. After it cooled and I rewound it, the Q had increased a hair
>or two and the inductance went up to 13.23 uH. At this point I cut
>it in half with wire cutters and tossed it in the trash; I'd never
>trust THAT core in any of my circuits!
>

There is another way of restoring toroid cores, that could be almost as exciting as spoiling spouse's supper. You will require a HIGH current A.C. source, such as power from the 60 Hz. A.C. line. A means of adjusting the current is necessary as well.

An appropriate setup would be a VARIAC (a variable Autotransformer) going into a step-down transformer (something like 6.3v A.C. out). Wind as many turns of heavy gage wire through the core to be restored as you can fit, and connect to the low-voltage output of the step-down transformer. To get a nice high current flowing thru the wire, the connections must be very low-resistance.

To restore the core, turn up the VARIAC , and very SLOWLY turn it down again. By slowly, take about twenty seconds to turn it down.

The idea here is to get the core magnetically saturated on the peaks of the 60 Hz. waveform. Since the core will alternately be saturated first one way (on +ve peaks), then the other way (on -ve peaks), if you slowly decrease the current, the core will be left with random magnetization in the end.....its restored!

Larger cores will require more current to restore. The really small memory cores (you can't fit them onto a resistor lead) require half an amp to saturate. I'd roughly guess that a small FT37 or T50 type core that is common in ham usage would require tens of amps to adequately saturate, and restore.

Glen Leinweber VE3DNL leinwebe@mcmail.mcmaster.ca

From owner-qrp-1@netcom.com Fri Nov 18 19:06:02 1994
Date: Fri, 18 Nov 94 14:18:22 -0600
From: adams@chuck.dallas.sgi.com (chuck adams)
Message-Id: <9411182018.AA05397@chuck.dallas.sgi.com>
Subject: Restoring Toroids

Glen Leinweber, VE3DNL, talks about a Variac etc. to restore toroids.

How about the magtape erasers? You start out with coil adjacent to

the thing and then move eraser away slowly. I'd think the magnetic field would be strong enough. Someone have experience here?

dit dit

SIG

Chuck Adams K5FO CP-60

adams@sgi.com

From owner-qrp-l@netcom.com Fri Nov 18 12:38:36 1994
Date: Fri, 18 Nov 1994 08:04:07 -0500 (EST)
From: David Moody <MOODY@Admin.Rose-Hulman.Edu>
Subject: Re: Single Paddle Keyers...
Message-Id: <01HJM8UF1GWM02HWH0@ADMIN.Rose-Hulman.EDU>

IN%"ham@wam.umd.edu" "Scott Richard Rosenfeld" wrote...

>I use these keyers all the time - and even when I get near an iambic, I
>use it like a single paddle. The "squeeze" thing just never felt right
>to me.

>

>I don't know what the big deal with IAMBIC paddles is, anyway...

What is the big deal with keyers?!? (Not a flame, just an observation.)
I've never quite got the hang of one at any speed greater than about
20 WPM without lots of extra dits flying out of the thing.
Give me a well adjusted, finely (or not) crafted straight key anytime.
They are light weight, self contained, require no external power other than
the operator's muscles, and can be obtained as cheaply as a couple of bucks.
If you are interested in lower power consumption for QRP, they are the
lowest. Well, so is the bug, but they weigh a heck of a lot more!

Just my two milliwatts worth...

KD8NY

David A. Moody | E-mail: David.Moody@Rose-Hulman.edu
Admin. Programmer/Analyst | Wk Ph: 812.877.8183
Rose-Hulman Inst. of Tech. | Amateur Call: KD8NY (CW QRP) ex-WB9MMD
Terre Haute, IN USA 47803 | (VMS Rules!!!)

Any facts expressed within belong to everybody.
Any opinions expressed within are my own and are not
necessarily the same as my employer, family, friends, etc.

It is up to you to know the difference.

From owner-qrp-l@netcom.com Fri Nov 18 16:40:14 1994
From: N9DD@aol.com
Date: Fri, 18 Nov 1994 12:10:24 -0500
Message-Id: <941118120950_2244355@aol.com>
Subject: Re: Single Paddle Keyers...

On 94-11-17 ham@wam.umd.edu (Scott Richard Rosenfeld) wrote:

> My IC-735 has the iambic keyer option in it, and I have a Vibrokeyer and
> an old El-Key and TWO Ten-Tec keyers, a KR-5A and a 606.
>
> I use these keyers all the time - and even when I get near an iambic, I
> use it like a single paddle. The "squeeze" thing just never felt right
> to me.

My first electronic keyer was a clunky old Heath model that used a single paddle. After learning the "batting back and forth" method I never could get used to iambic keying either. Occasionally, I will squeeze out a CQ or two, but usually make a mistake and go back to my old ways. I would guess that alot of cw ops are the same. 7.3, Tom N9DD

From owner-qrp-l@netcom.com Fri Nov 18 15:37:36 1994
Date: Fri, 18 Nov 94 10:42:09 CST
From: msdooley@collie.aud.alcatel.com (Michael S. Dooley)
Message-Id: <9411181642.AA13829@collie.aud.alcatel.com>
Subject: Small Wonder 40

Well, gang... I bought the QRP Rig Dave Benson (NN1G) writes about in the latest issue of QST. I built it this week and got to have my first 'clip lead' QSO with a young man near Pittsburgh, Pa. Looks like a real nice design. It was easy to align... I used a shortwave receiver to set the VFO and peak the transmitter. Then I hooked it to an antenna and tuned around listening. I heard KB3AFT (Jim Spence) calling CQ. I connected my straight key to the radio (more clip leads) and called him. He came back on the first call and gave me a 559 (his was 589). After the QSO I measured the output power and it was 1.9 watts (wow). I have to tell you, I've been wanting to get back into CW and HF for over a year now.. that's why I joined the QRP group... It's been just over 10 years since my last CW QSO and I had a great time making this contact! Can't wait till the next fox hunt night.

If you want to buy and build a QRP rig, this is a good choice. It was easy to build and align. Last night I gave a short talk to the Explorer post our Ham Club sponsors and showed them the radio. After the meeting three of the people there said they would be ordering the radio from Dave. Hot Dog! More QRPers!
Mike Dooley

KE4PC

From owner-qrp-1@netcom.com Fri Nov 18 22:44:57 1994
Message-Id: <aaf312311a021003ee72@[129.74.35.16]>
Date: Fri, 18 Nov 1994 21:26:01 -0500
From: Steve.Hideg.1@nd.edu (Steve Hideg)
Subject: Re: Small Wonder 40

Michael S. Dooley wrote:

> He came back on the first call and gave me a 559 (his was 589).
^

How do you determine this on a radio with no S-meter?

--Steve

Steve Hideg Macintosh Consultant/Analyst

Office of University Computing E-mail: Steve.Hideg.1@nd.edu
G004 Computing Center/Math Building Telephone: (219) 631-EXAM
University of Notre Dame Amateur Radio: N8HSC/9
Notre Dame, IN 46556

Microsoft: Software so big, it beeps when it backs up.

From owner-qrp-1@netcom.com Sat Nov 19 04:01:59 1994
From: dwebster@netcom.com (Dennis Webster)
Message-Id: <199411190728.XAA26031@netcom11.netcom.com>
Subject: Re: Small Wonder 40
Date: Fri, 18 Nov 1994 23:28:49 -0800 (PST)

>
> Michael S. Dooley wrote:
>
> > He came back on the first call and gave me a 559 (his was 589).
> ^
>> Steve Hideg wrote:
>
> How do you determine this on a radio with no S-meter?
>

Pretty easy...by ear, the same as with the tone report:

1 is faint barely perceptible 9 extreamly strong.

I think by what I've seen, the ear is more accurate than the meter.

72 Dennis

--

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-----
|Dennis Webster WJ6H/QRP          * LESS IS MORE! *|
|dwebster@netcom.com              |
|-----|
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From owner-qrp-1@netcom.com Sat Nov 19 04:36:29 1994
Date: Sat, 19 Nov 1994 00:28:25 -0500 (EST)
From: prvalko <prvalko@vela.acs.oakland.edu>
Subject: Re: Small Wonder 40
Message-Id: <Pine.3.89.9411190056.C966-0100000@saturn.acs.oakland.edu>

On Fri, 18 Nov 1994, Steve Hideg wrote:

> Michael S. Dooley wrote:

> > He came back on the first call and gave me a 559 (his was 589).

>

> How do you determine this on a radio with no S-meter?

>

Heheheh Guys... Guys... PUHLEEZE allow me the honors, this is a long
time pet peeve of mine :-)

Yo' Steve! What's an "S" meter got to do with a signal report?

The second digit in an RST is the signal strength based on the operator's
judgement... ranging from a low end 1 unreadable signal to a 9, which
means REALLY strong. It is NOT repeat NOT supposed to be the S meter
reading of your receiver! Heck, I've had plenty of rigs that never had a
signal peak over a six or seven... the often-heard "Stingy S-Meter."

So... Post this handy ZjL rule of thumb in a conspicuous place in the
shack...

- 9 Loudest signal on the band, source of Ozone depletion
- 8 Pretty Strong signal, but probably under 5KW
- 7 Typical signal, you don't want to offend the other op!
- 6 Typical signal, provided you already received a 579
- 5 Given to known QRP ops, they translate it to a 9
- 4 Only used by newbies that think S-Meter is RST's "S"
- 3 Rarely used, but lots of fun to send to known Alpha owners
- 2 Only used by county hunters, often screamed several times
- 1 Why'd you bother to come back to me? You lid.

73! =paul= wb8zjl

p.s. Feel free to circulate this chart in your club newsletters but give me due credit. HEY! Didja read my Top Ten in World Radio this month?

From owner-qrp-1@netcom.com Fri Nov 18 18:59:03 1994
From: pugetor!PUGET!ASHWORTH@uunet.uu.net (Dennis Ashworth)
Date: 18-Nov-94 12:28:27
Subject: Subscribe
Message-Id: 11E4CC2E01A9D4D1

Subscribe

From owner-qrp-1@netcom.com Fri Nov 18 20:08:07 1994
From: KELL@mpac.jsc.nasa.gov
Date: Fri, 18 Nov 1994 16:52:14 -0600 (CST)
Message-Id: <941118165214.62@mpac.jsc.nasa.gov>
Subject: SUMMARY: Adding turns to a VFO Toroid

Greetings all,

A couple of days ago, I asked the following question.

I have a NORCAL 40 with the VFO toroid wound with 59 turns to get it into the novice band. I want to move the rig down to the the 7030/7040 area, so I need to add three turns. The thought of removing 59 turns, so I can put 62 back on is a real turn-off. So I thought, why not just tack a bit of wire onto the end of the current piece and then add three turns? Would there be a problem with doing this? There would be this solder joint in the middle of toroid. Would it affect the operation of the coil in some unspecified negative fashion? Does everybody already do this and just don't talk about it? :)

Well, I got several very helpful answers. Jack, KD6ZMJ asked if I had received any help as he was wondering the same thing, so I have collected all the answers together and am posting a summary here.

Thank you all for your help, I kind of felt that it was a dumb question, but I got a bunch of real good answers.

72 & 73

Ted Kell@mpac.jsc.nasa.gov
KC5CUW/AA

[illegible]

What you describe is just a toroid with a few taps. Go ahead and so it, just be careful not to create a short circuit. In any event, I'd preserve the existing 59 turns, add 3 more (wind in the same physical sense/direction), and use a switch (keep the wiring very stiff physically to avoid instability), and now you should be able to switch between the two ranges.

73 Dave WBOGAZ dgf@netcom.com

[illegible]

There is no problem with splicing on turns. Just be sure the solder joint is insulated from the rest of the turns. When I built mine I had to get the board parts to go with the partial kit I bought from NorCal. The result was that I had extra toroids for the VFO. I have two coils wound with the necessary turns for the General and Novice sections of the band. If I need to drop it to the General part of the band I just unsolder and solder in the other coil.

```
=====
7.3 de Michael aa0ub          ( formerly kd6wdd and kg0ot )
miker@cc.com                  ---=< I'm the last 'S' in KISS >==--
=====
```

[illegible]

Reply to: RE>Adding turns to a VF0 toroid
I did it, just as you described. Worked great - go for it!

73,
Larry KB7ZNE/AA

[illegible]

I've heard you can do this , but have not done it myself. What a lot of guys w/ norcals have done is put a trimmer capacitor in parallel with the coil and use a front panel mounted on/off switch to cut it in and out of the circuit . This allows for the rig to have 2x the bandsread. (some guys have even used a 3 position switch to allow 2 caps to triple the bandwidth.) This mod was written up in QRPp last year. I use mine to get

If u need more details on the mod , e-mail me and ill be more specific on it.

72.5 almost a grp convert,

Stan Goldstein , N6ULU

Ted-- you ought to be able to add the turns without difficulty. I have not done it to the NorCal 40 but I have used that technique on other rigs with other torroids. Just make sure the insulation is stripped well enough for you to get a good connection between the wires. 72 de alan

[illegible]

Did anyone in the group respond to your question whether it is OK to simply solder on more wire to add turns to a toroid? I have been wondering the same thing. If you get an answer, please post it.

Jack Weaver@cc.chiron.com

Well, maybe this says something about my personality....but.... watching the Simpson's on TV (no, not the trial), Marge's sister was interested in getting a date, but couldn't do it...at one point her retort that her only fun in life was "ham radio" and the cartoonist showed a funny looking radio with foreign voices

coming out of it. Too bad they didn't use CW :-)

Back to finishing a degree.

Clark
WA3JPG

From owner-qrp-l@netcom.com Fri Nov 18 14:29:21 1994
Date: Fri, 18 Nov 94 08:49:01 MST
From: torell@sicom.com
Message-Id: <9411181549.AA25727@sicom.com>
Subject: Winding Toroids

Gang-

My experience at work with toroids is to expect a reasonable (2 to 5%) variation in each one. This is due to the variation in the core material, and in winding techniques. Cores can be wound with multiple levels of windings (e.g., 88 mH) without causing any real problems; so, crossing over one or two turns probably isn't worth worrying about. Our usual procedure is to spread the turns uniformly around the core. For fine tuning, we would squeeze the turns together. What this actually does is to increase the inter-winding capacitance, which looks like a capacitor in parallel with the inductor. Squeezing the turns will increase this capacitance, lowering the frequency of the tuned circuit. Similarly, when you put Q dope on a core, the dielectric constant is increased between the windings, and the interwinding capacitance goes up. We were only bothered by this on very sensitive circuits; mostly VCO and VCXO tuning inductors.

The moral of the story: Always wind extra turns on the toroid, and have another variable element somewhere for fine tuning!

Kent Torell KJ7EY
torell@sicom.com

From owner-qrp-l@netcom.com Fri Nov 18 21:35:01 1994
Date: Fri, 18 Nov 94 13:34:34 HST
From: jeffrey@math.hawaii.edu (Jeffrey Herman)
Message-Id: <9411182334.AA01086@kahuna.math.hawaii.edu>
Subject: Re: Winding Toroids

Regarding squeezing and stretching the windings on an inductor, if you look at the formula for an air core inductor the length (the windings extend over) is one of the parameters that determines the inductance. All my air core home-wound (on cardboard form) inductors are 'close wound'. I've never worked with those new fangled donut shaped things you guys like so much; it'd be too tempting to take a bit out of one.

Jeff NH6IL